

Notice of Allowability

Application No.

10/672,993

Examiner

Andrew T Sever

Applicant(s)

JAMES R COLE ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-48.
3. ☒ The drawings filed on 25 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION***Allowable Subject Matter***

1. Claims 1-48 are allowed.
2. The following is an examiner's statement of reasons for allowance:

Independent claims 1 and 15 claim a display with reduced moiré which comprises of a lenticular screen and a projector which projects onto the lenticular screen. In order to reduce the moiré an actuator is provided to cause displacement of the projection of the pixels this can be achieved for example (but not limited to) by displacing the projector (as in claim 15) or by displacing an optical component such as the optical modulator or a mirror reflecting the image light (as in claims 4 and 5 respectively). Although the prior art does teach reducing moiré in some stereoscopic projection system with lenticular screens (see for example US 2002/0118452 to Taniguchi et al which teaches in paragraph 8 that the method of Taniguchi reduces moiré) these are frequently obtained by means other than displacing the projection of the pixels of the display system such as taught by Imai (US 5,825,541 see column 16 lines 54-61) which teaches changing the distance between the lenticulars and other optical components during calibration as is well known and taught by Imai. Also known in the prior art is displacing the lenticular screen itself (not necessarily for the purpose of reducing moiré), however this does not cause displacement of the projection of the pixels on the lenticular screen, since it is the screen itself that is moving not the projection and it would not be obvious to move the projection rather than the screen since the mechanics of moving a screen are far different than that of a projection. The prior art did not teach moving the projector or a mirror between the

projector and the projection screen in such a way that it would reduce moiré on the projection screen (namely the displacement would have to be repetitive (not just occurring once during a calibration for example not just moving a micron to the left during calibration rather it would need to repetitively move at a rate more closely related to the rate the pixels are refreshed.) and accordingly rapid enough not to cause moiré itself or be detectable by an observer, else it would increase moiré, since if it was too slow or not repetitive it would simply shift the moiré pattern to a different position and/or make perceived effect worse.) Accordingly since the prior art did not teach displacement of the projection of the pixels to reduce moiré on the lenticular screen claims 1 and 15 are allowed. Claims 2-14 and 16-28 are dependent on claims 1 and 15 respectively and are therefore also allowed.

Independent claim 29 is the method for reducing moiré, which includes disturbing the projection of pixels onto the back of a lenticular screen such that the pixels are displaced to reduce moiré. As discussed above with respect to claims 1 and 15, the prior art does not teach displacing the projection of the pixels in such a way as to reduce moiré, accordingly claim 29 is allowed and claims 30-38 which are dependent on claim 29 are also allowed.

Independent claim 39 is being held by the office to claim essentially the same method as claim 29, as the program storage system readable by a computer tangibly embodying a program, applet, or instructions are well known components of projectors and/or computer systems but as will be set for in the following the method is necessary to the understanding of the claim. Claim 39 claims that the program storage system

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embodies a program to perform method steps for reducing moiré. Programs to reduce moiré are well known for example as taught by US 6,732,641 to Fissell in column 10 lines 9-26. Since moiré is found in such diverse devices as printing, CRT monitors, and in the present disclosed invention rear projectors, claim 39 would be indefinite without the claimed method since the claimed method establishes in what environment the computer program is to reduce moiré. Claim 39 is being treated essentially the same as the method of claim 29, since the method establishes that the program reduces moiré with respect to projecting onto a lenticular screen. As established above with respect to claim 29 the prior art does not teach the method for reducing moiré of claim 29, therefore the programs and storage medium they are stored on are incapable of performing and storing the methods of claim 29 since prior to applicant's invention the method of reducing moiré of claim 29 did not exist. Accordingly claim 39 is allowed. Claims 40-48 are dependent on claim 39 and are therefore also allowable.

All claims are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 6,384,980 to McKinley teaches a moving lenticular screen.

US 2004/0041747 to Uehara et al. teaches a moving lenticular screen in a 3D display.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS



JUDY NGUYEN
PRIMARY EXAMINER